

AMENDMENTS TO THE CLAIMS

1. (currently amended): A capillary electrophoresis chip apparatus for detecting a nucleotide polymorphism or a single nucleotide polymorphism, said apparatus comprising an electrophoresis chip comprising:

an upper channel layer, ~~wherein the upper layer comprises~~ comprising a two-dimensional or multidimensional microfluid channel and an electrode aperture ~~structure~~ for loading a sample;

a middle electrode layer ~~[[for]]~~ capable of sealing the microfluid channel to form an intact capillary, ~~[[and]]~~ said middle electrode layer comprising electrodes capable of providing ~~[[the]]~~ a needed voltage for the electrophoresis chip; and

a lower heating layer ~~[[for]]~~ capable of providing a stable temperature gradient for electrophoresis, said lower heating layer comprising two or more sets of temperature control elements that are spaced apart from each other,

wherein the upper channel layer, the middle electrode layer, and the lower heating layer are thermal conductive and adhesive to each other.

2. (canceled).

3. (currently amended): ~~[[A]] The~~ capillary electrophoresis chip apparatus ~~for detecting nucleotide polymorphism or single nucleotide polymorphism according to~~ of claim 1, wherein the sectional width or diameter of the microfluid channel is between 5 to 200 μm ; ~~wherein~~ the depth of the fluid microfluid channel is between 5 to 200 μm ; and ~~wherein~~ the length of the electrophoresis microfluid channel is between 1 to 30 cm.

4. (currently amended): ~~[[A]] The~~ capillary electrophoresis chip apparatus ~~for detecting nucleotide polymorphism or single nucleotide polymorphism according to~~ of claim 1, wherein the ~~material for making~~ the middle electrode layer is made of gold, platinum, or graphite.

5. (currently amended): ~~[[A]] The~~ capillary electrophoresis chip apparatus ~~for detecting nucleotide polymorphism or single nucleotide polymorphism according to~~ of claim 1, wherein the middle electrode layer is coated with a layer of polydimethylsiloxane (PDMS).

6. (currently amended): ~~[[A]] The capillary electrophoresis chip apparatus for detecting nucleotide polymorphism or single nucleotide polymorphism according to~~ of claim 1, wherein the heating layer ~~comprise two or more sets of temperature control elements that are spaced apart,~~ wherein each temperature control element is kept at a different constant temperature so as to form a spatial temperature gradient.

7. (currently amended): ~~[[A]] The capillary electrophoresis chip apparatus for detecting nucleotide polymorphism or single nucleotide polymorphism according to~~ of claim 1, wherein the stable temperature gradient is a temporal temperature gradient established by gradually and uniformly heating the whole chip.

8. (new): The capillary electrophoresis chip apparatus of claim 1, wherein the upper channel layer comprises a two-dimensional microfluid channel, and the lower heating layer comprises two sets of temperature control elements that are spaced apart from each other, wherein each temperature control element is kept at a different constant temperature so as to form a spatial temperature gradient.